

WHO goal: Eliminating neonatal tetanus

In 1989 the General Assembly of the World Health Organization set a target date of 1995 for the elimination of neonatal tetanus (NNT). This was subsequently expressed as a rate of NNT cases of below 1/1000 live births in every region of every country. Unlike the programs to eliminate smallpox or polio, the disease potential is always present with NNT even after the target is reached, due to the nature of organisms found everywhere in the environment. Continuity of surveillance and services is extremely important.

NNT is an underreported disease, with barely 5% of the cases reported. Only recently has awareness of the problem come forward, but timeliness and completeness of reporting are lagging. The program for elimination of NNT was prompted by the fact that NNT is the second-greatest killer of

children below the age of 1 (only measles is greater). In many African and Asian countries, mortality may reach as high as 5/1000 live births. Countries at risk include almost all of the African countries and countries of South and East Asia.

Immunization was identified by the Expanded Programme on Immunization (EPI) as one of the important elements of child survival and development; hence, it is crucial to maintain high immunization coverage, including tetanus toxoid (TT), for women of childbearing age.

The strategy for NNT elimination includes the following:

- * Identify high-risk areas through active search review of health records and proper case investigation to identify unimmunized women.

- * Increase TT coverage by ensuring that any prenatal care or any visit to an

EPI facility includes tetanus immunization, if needed.

- * Monitor progress toward NNT elimination by requiring monthly routine reporting of NNT by all health facilities and monthly routine reporting of the proportion of newborns protected at birth by tetanus immunization of their mothers.

- * Ensure quality of the TT used (to WHO standard) by regular evaluation of the cold chain.

Within Saudi Arabia, a standard case definition was formulated and distributed to all health units in 1992, the same year that zero reporting for NNT became required. Reporting timeliness and completeness are now monitored closely at both regional and central levels. Every case of NNT should be immediately reported and thoroughly investigated.

Since 1986, the Kingdom has

Brucellosis

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care. Among specific livestock care activities, cleaning livestock pens (OR=27, 95% CI 32-1,263) and slaughtering livestock (OR=inf) had the highest odds ratios. Other activities were attending birth of livestock (OR=40.3, 95% CI 10-177) and milking livestock (OR=82.5, 95% CI 10-1,804).

Given the strong association with livestock, we stratified additional analyses of exposure to raw meat and raw milk by livestock ownership. The OR for eating raw liver among households that raised livestock was 4.9 (95% CI 1.6-3.8).

We found no other association of brucellosis with eating raw meat, raw milk or dairy products. However, persons who had a sore or bleeding gums or other lesions in the mouth and drank raw milk in households that kept livestock had an increased risk of brucellosis (OR = 19, 95% CI 2.3-849). The association was not seen in houses without livestock or with community controls.

-- Reported by *Nashma Saleh Al-Shiban (Field Epidemiology Training Program)*

Editorial note: Brucellosis is endemic in the Middle East^{1,2}. In Saudi

Arabia, the prevalence (percent) of brucellosis, based on a nationwide survey in 1992, was found to be 2.5% in the central region, 2.3% in the southern and eastern regions, 1.6% in the northern region and 0.6% in the western region³.

In Saudi Arabia 92% of cases are due to infection with *B. melitensis* and 8% are due to *B. abortus*; *B. suis* of hogs has not been isolated¹.

This study found that the incidence of laboratory-diagnosed brucellosis in southwestern-Riyadh City (central region) was about 0.8% in 1993. However, patients with brucellosis usually undergo more than one serologic test either to confirm the diagnosis or for follow-up purposes. Moreover, serologic tests can be positive long after recovery.

Without exclusion of repeated tests, incidence rates of brucellosis may have been overestimated. The surveillance system at Riyadh Al Kharij Hospital developed a computer program to identify only newly diagnosed cases of brucellosis based on serologic tests. As a result, a dramatic fall (by about 75%) in the number of reported cases was observed⁴.

Risk factors for brucellosis in Saudi Arabia included: intake of unpasteurized (raw) milk or milk products, contact with livestock (including breeding, milking, attending birth, touching placental membranes of ani-

mals) or cutting raw meat^{2,3}. However, according to this study, drinking raw milk is not a risk factor for brucellosis. This result should be taken with caution as it presents a disagreement with other studies cited repeatedly in medical literature.

The low prevalence of brucellosis in urbanized western Saudi Arabia was attributed to the less common practice of drinking raw milk¹. However, raw milk may not serve as a good medium for brucella after it turns sour (laban).

Interventions to control the disease should include socially acceptable health educational programs to increase awareness among people about the modes of disease transmission.

References

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achieved a level of more than 90% coverage for DPT (3) among children 1 year old. Knowledge, attitudes and practices toward tetanus immunization, antenatal services and postnatal care were first investigated through the mother and child health survey of 1991, which was based on a national random sample of 150 clusters, with 6,305 urban and rural households.

The following are some of the findings:

* Knowledge about TT among ever-married females: 68%

* Ever-married females who received two or more TT doses: 63%

* Pregnant women who have regularly attended antenatal care clinics: 85%

* Postnatal care -- at government institutions: 76%; at private clinics: 10%; at home: 14%

Home deliveries were four times greater in rural areas than in urban (27% vs. 7%). They were highest in the southern regions (31%) and smallest in the central (5%) and eastern regions (3.5%).

Also in 1986, the Kingdom achieved the objective of NNT elimination, with an overall incidence below 0.1/1000 live births. In 12 of the 19 regions, the range of NNT incidence is between 0 and 0.5/1000 live births.

Intensive training and education are continuing in the area of maternity and child health. Continuing education through supervisory visits helps to ensure quality and the maintenance of the cold chain.

The objectives in the Kingdom are to reach and maintain a coverage level of 97% for all EPI antigens by 2000 and to raise TT coverage among pregnant women by 1995 to match the levels reached by childhood vaccines.

By next year, all areas in which NNT cases are occurring will be identified. Campaigns, followed by outreach mobile clinics, will be used to vaccinate all pregnant women and all women of childbearing age in those areas. Safe facilities for delivery will be provided within easy reach.

By 2000, 97% of pregnant women will be vaccinated with at least two TT doses, and 95% of deliveries will be supervised by qualified medical personnel.

-- Reported by Dr. Omer Makki Mohammed and Dr. Taher Ismail Salim (Department of Infectious Diseases, MOH) and Dr. Mohammed Hassan Baldo (General Directorate of Health Centers, MOH)

Letters

To the editor:

I would like to comment on "Preventing vaccine failure" by Dr. Mohammed Khalil from Suleimania Children's Hospital, Riyadh (Saudi Epidemiology Bulletin, Vol. 1, No. 3). It is still possible to have an occurrence of outbreaks of a vaccine-preventable disease, like measles, despite high vaccine coverage.

First: It is well known that the widespread use of measles vaccine clearly has had a major impact on the number of reported cases of the disease. The success in interrupting measles transmission in some places, coupled with the dramatic success of the smallpox eradication program that was based on vaccination of less than 100% of susceptibles (theory of herd immunity), offered hope of interrupting measles transmission. However, the continued transmission of measles in many areas despite high levels of vaccination raised doubts about the influence of herd immunity. In 1977, Walter A. Orenstein evaluated the influence of prompt response to epidemics in a series of settings. He concluded that aggressive response to outbreaks was a crucial adjunct to high immunization levels and disease surveillance in stopping transmission.

Second: How should we look at vaccine failure? In fact, the issue of vaccine effectiveness is often raised because a considerable percentage of reported measles cases have a history of adequate vaccination. The answer could easily be obtained from the following mathematical model which Dr. Orenstein and I worked on at the U.S. Centers for Disease Control and Prevention's measles eradication program (indigenous measles):

Target population	10000	10000
Vaccine coverage	90%	95%
No. vaccinated	9000	9500
Using a 90% efficacious vaccine:		
No. rendered immune	8100	8550
Susceptibles	1900	1450
	(Unvacc. = 1000)	(Unvacc. = 500)
	(V. failure = 900)	(V. failure = 950)

This model shows that as you increase vaccine coverage, the total number of susceptibles decreases, while the number and proportion of vaccine failure increase. That is why we expect an increasing proportion of measles among vaccinees (vaccine failure) as we increase vaccine coverage. This vaccine failure (primary failure) should not raise too much worry. The prime concern should be to raise and maintain high vaccine coverage, set up a strong surveillance system, and provide rapid response to epidemic occurrence.

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in the same district. All countries have a good system of disease surveillance and record the incidence of complications. For example, in the United States an average of 150 to 300 people per year develop NF.

There are no specific preventive or control measures other than the usual basic principle of not neglecting skin infections or wounds, even if they are small. They should be treated quickly and properly.

The causative agent is very sensitive to antibiotics. It is also necessary to maintain aseptic techniques in case any invasive procedure is undertaken, no matter how small or simple it may seem.

-- Reported by the Infectious Diseases Department, Ministry of Health